

REMARKS

Claims 1-30 are now pending in the application. Claims 1-30 stand rejected. Claim 19 is amended. Support for the amendment can be found in the originally filed specification at Figures 6, 9, and 10 and related discussion at p. 18, l. 5 – p. 22, l. 20 and p. 27, l. 25 – p. 30, l. 70. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

DOUBLE PATENTING

Claims 1-4, 7-12, 15-18, and 28-30 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of Hataoka et al. (U.S. Pat. No. 6,965,202) in view of Narita (U.S. Pat. Pub. No. 2002/0017842). This rejection is respectfully traversed.

Applicants herewith file a terminal disclaimer.

Accordingly, Applicants respectfully request the Examiner reconsider and withdraw the rejection of claims 1-4, 7-12, 15-18, and 28-30 on the ground of nonstatutory obviousness-type double patenting.

REJECTION UNDER 35 U.S.C. § 102

Claims 19 and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Narita (U.S. Pat. Pub. No. 2002/0017842). This rejection is respectfully traversed.

Narita is generally directed toward a lamp unit for a projector. In particular, the Examiner relies on Narita to teach (par. 55, lines 6-7) a portion of the reflector having an air inlet angled to introduce an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the bulb. However, Narita does not teach, a lamp with an air inlet formed in the region of the reflector below the sealing portion

with respect to gravity and an air vent formed in a region of the reflector located above the sealing portion with respect to gravity, and the air inlet and the air vent are arranged so that the air is introduced through the air inlet onto an upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent.

Applicants previously argued that the lamp of Narita has airflow in a different direction, and that the air inlet and air vent openings are in an opposite configuration with respect to upper and lower surfaces of the reflector. The Examiner responded that the “upper” and “lower” portions are interchangeable, and refer only to the perspective of an observer, and not to any structural differences. For example, the Examiner suggests to rotate the device of Narita 180 degrees with respect to the horizontal axis in the figure, so that the upper portion becomes the lower, and vice versa, without any changes to the structure of the device. Also, the Examiner suggests that the direction of the airflow in Narita is interchangeable, since all of the surfaces of the bulb and inner reflector surfaces are touched by the air stream in a manner required by the claim.

However, the upper and lower portions of the lamp cannot be reversed as suggested because the principal of convection, which depends on the orientation of the lamp portions with respect to the gravity vector, leads to the “upper” portion being hotter than the “lower” portion. If one were to invert the lamp of Narita as suggested to change which air vent is upper and which lower, then the “upperness” and “lowerness” of the portions of the lamp would also change. Therefore, in either orientation, the air vents of Narita would cause air flowing by natural convection to predominantly first strike the “lower” portion of the lamp and transfer even more heat to the “upper” portion, thus

worsening the blackening effect. In other words, the Examiner's position that the "upper" and "lower" portions refer only to the perspective of the observer are unsupportable, since they specify how the air vent must be configured in order to accomplish the heat transfer using air flowing by natural convection in at least one orientation of the lamp and reflector. Narita's lamp does not fulfill this requirement in any orientation.

Applicants' claimed invention is generally directed toward a lamp with a reflector. In particular, Applicants' claimed invention is directed toward such a lamp with an air inlet formed in the region of the reflector below the sealing portion with respect to the gravity vector and an air vent formed in a region of the reflector located above the sealing portion with respect to gravity and the air inlet and the air vent are arranged so that the air is introduced through the air inlet onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent. For example, independent claim 19, especially as amended, recites that "an air inlet is formed in a region of the reflector located below the sealing portion with respect to gravity ... and an air vent is formed in a region of the reflector located above the sealing portion with respect to gravity ... and the air inlet and the air vent are arranged so that the air is introduced through the air inlet onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent." Therefore, Narita does not teach all of the limitations of independent claim 19. These differences are significant because Applicants' lamp can use air flowing by natural

convection to at least partially accomplish the heat transfer, with the additional option of supplementing the effect of natural convection with forced air flow. In contrast, the lamp of Narita, if reoriented as suggested by the Examiner could only ever accomplish the heat transfer by using forced airflow to introduce the air through the vent instead of the inlet.

Accordingly, Applicants respectfully request the Examiner reconsider and withdraw the rejection of claim 19 under 35 U.S.C. § 102(b).

REJECTION UNDER 35 U.S.C. § 103

Claims 1-4, 7-14, 17, 18, 25, 26, and 28-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Horiuchi et al. (WO 01/29862) in view of Narita (U.S. Pat. Pub. No. 2002/0017842) and Hataoka et al. (JP 2001-371365). Claims 5, 6, 20, and 21 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Horiuchi et al. (WO 01/29862) in view of Narita (U.S. Pat. Pub. No. 2002/0017842), Hataoka et al. (JP 2001-371365), and Pitkjan (U.S. Pat. No. 3,688,149). This rejection is respectfully traversed. Claims 22 and 23 stand rejected under 35 U.S.C § 103(a) as being unpatentable over Horiuchi et al. (WO 01/29862) in view of Narita (U.S. Pat. Pub. No. 2002/0017842), Hataoka et al. (JP 2001-371365), and Okamoto et al. (U.S. Pat. No. 6,919,686). These rejections is respectfully traversed.

Applicants herewith file a Priority Document of the present invention (JP 2003-115538) to overcome all rejections under 35 U.S.C § 103(a) over Hataoka et al. (JP 2001-371365). Applicants note that this reference number of Hataoka et al. indicated by the Examiner refers to the number of the basic application of Hataoka et al. (USP 6,965,202). In actuality, the number of the Japanese Patent Publication of Hataoka et

al. should be 2003-234067, having been published on August 22, 2003. In contrast, the number 2001-371365 is an application number. Therefore, by filing the Priority Document of the present invention, Hataoka et al. (JP 2001-371365) Applicants render moot all rejections under 35 U.S.C. § 103(a) based on Hataoka et al. (JP 2001-371365).

Additionally, the Examiner misinterprets the teachings of Horiuchi et al. In particular, the Examiner erroneously states that Horiuchi discloses the structure that a compression stress is applied. However, Horiuchi has no structure that a compression stress is applied. Therefore, Hataoka is removed as a reference, and no reference teaching a structure that a second glass portion exists and that a compression stress is applied.

Accordingly, Applicants respectfully request the Examiner reconsider and withdraw the rejections of claims 1-6, 7-14, 17, 18, 20-23, 25, 26, and 28-30 under 35 U.S.C § 103(a).

Claim 24 stands rejected under 35 U.S.C § 103(a) as being unpatentable over Narita (U.S. Pat. Pub. No. 2002/0017842) in view of Okamoto et al. (U.S. Pat. No. 6,919,686). This rejection is respectfully traversed.

Narita is generally directed toward a lamp unit for a projector. In particular, the Examiner relies on Narita to teach (par. 55, lines 6-7) a portion of the reflector having an air inlet angled to introduce an air flow striking against an upper portion of the luminous bulb and then coming into a lower portion of the bulb. However, Narita does not teach, suggest or motivate a lamp with an air inlet formed in the region of the reflector below the sealing portion with respect to gravity and an air vent formed in a region of the reflector located above the sealing portion with respect to gravity, and the air inlet and

the air vent are arranged so that the air is introduced through the air inlet onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent.

The teachings of Okamoto et al. are generally directed toward a discharge lamp having an auxiliary light source to produce light with a short wavelength. In particular, the Examiner relies on Okamoto to teach a trigger line wound around a sealing portion (Fig. 2a). However, Okamoto et al. do not teach, suggest, or motivate a lamp with an air inlet formed in the region of the reflector below the sealing portion with respect to gravity and an air vent formed in a region of the reflector located above the sealing portion with respect to gravity, and the air inlet and the air vent are arranged so that the air is introduced through the air inlet onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent.

Applicants previously argued that the lamp of Narita has airflow in a different direction, and that the air inlet and air vent openings are in an opposite configuration with respect to upper and lower surfaces of the reflector. The Examiner responded that the “upper” and “lower” portions are interchangeable, and refer only to the perspective of an observer, and not to any structural differences. For example, the Examiner suggests to rotate the device of Narita 180 degrees with respect to the horizontal axis in the figure, so that the upper portion becomes the lower, and vice versa, without any changes to the structure of the device. Also, the Examiner suggests that the direction of

the airflow in Narita is interchangeable, since all of the surfaces of the bulb and inner reflector surfaces are touched by the air stream in a manner required by the claim.

However, the upper and lower portions of the lamp cannot be reversed as suggested because the principal of convection, which depends on the orientation of the lamp portions with respect to the gravity vector, leads to the “upper” portion being hotter than the “lower” portion. If one were to invert the lamp of Narita as suggested to change which air vent is upper and which lower, then the “upperness” and “lowerness” of the portions of the lamp would also change. Therefore, in either orientation, the air vents of Narita would cause air flowing by natural convection to predominantly first strike the “lower” portion of the lamp and transfer even more heat to the “upper” portion, thus worsening the blackening effect. In other words, the Examiner’s position that the “upper” and “lower” portions refer only to the perspective of the observer are unsupportable, since they specify how the air vent must be configured in order to accomplish the heat transfer using air flowing by natural convection in at least one orientation of the lamp and reflector. Narita’s lamp does not fulfill this requirement in any orientation.

Applicants’ claimed invention is generally directed toward a lamp with a reflector. In particular, Applicants’ claimed invention is directed toward such a lamp with an air inlet formed in the region of the reflector below the sealing portion with respect to the gravity vector and an air vent formed in a region of the reflector located above the sealing portion with respect to gravity and the air inlet and the air vent are arranged so that the air is introduced through the air inlet first onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and

then flows onto a lower portion of the lamp before being ejected from the air vent. For example, independent claim 19, especially as amended, recites that “an air inlet is formed in a region of the reflector located below the sealing portion with respect to gravity ... and an air vent is formed in a region of the reflector located above the sealing portion with respect to gravity ... and the air inlet and the air vent are arranged so that the air is introduced through the air inlet onto the upper portion of the lamp by deflection off a region of the reflector disposed above the upper portion of the lamp, and then flows onto a lower portion of the lamp before being ejected from the air vent. Therefore, Narita and Okamoto et al. do not teach, suggest, or motivate all of the limitations of independent claim 19. These differences are significant because Applicants’ lamp can use air flowing by natural convection to at least partially accomplish the heat transfer, with the additional option of supplementing the effect of natural convection with forced air flow. In contrast, the lamp of Narita, even if modified according to the teachings of Okamoto et al., and even if reoriented as suggested by the Examiner, could only ever accomplish the heat transfer successfully by using forced airflow fighting against the effect of natural convection.

Accordingly, Applicants respectfully request the Examiner reconsider and withdraw the rejection of claim 24 under 35 U.S.C. § 103(a) in view of its dependence from an allowable base claim.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is

believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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